PISA

PISA 2015: A Sneak Preview

Tuesday, October 25, 2016
9:30 – 10:30 a.m. (ET)

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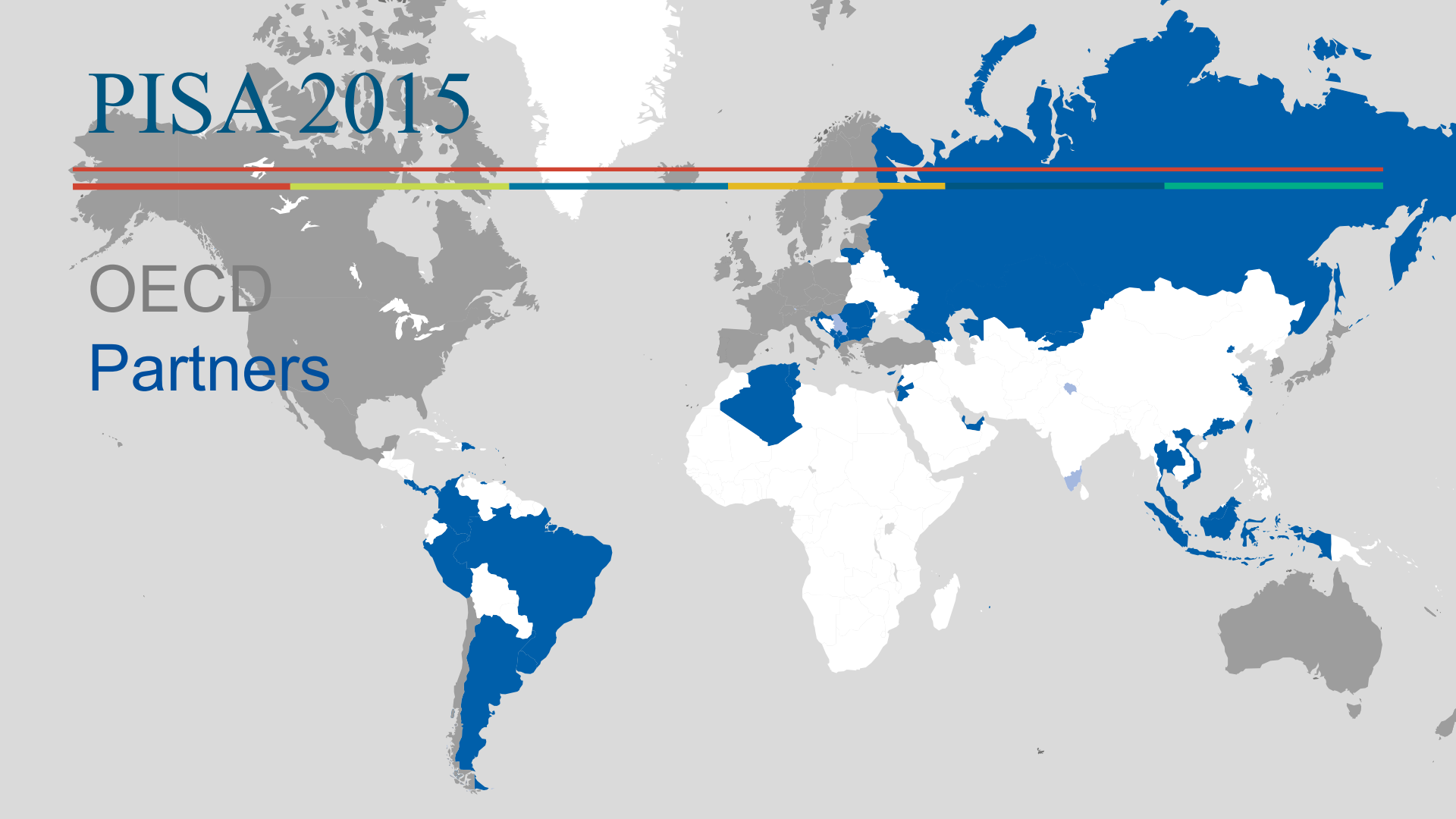
Bob Wise

OECD
BETTER POLICIES FOR BETTER LIVES

PISA 2015

- **Looking at school systems in 72 countries and economies**
- **Students assessed in science, mathematics, reading, collaborative problem-solving and financial literacy**
- **Results to be released on December 6**
- **Key issues:**
  - How far are we nurturing a generation of scientifically literate young people?
  - Are schools adequately preparing young people for adult life?
  - What kinds of learning environments do we find in high performing systems?
  - Can schools improve the futures of students from disadvantaged backgrounds?


PISA 2015
OECD
Partners

PISA in brief - 2015

In 2015, over half a million students…

- representing 28 million 15-year-olds in 72 countries/economies

… took an internationally agreed 2-hour test…

- Goes beyond testing whether students can reproduce what they were taught…
- … to assess students' capacity to extrapolate from what they know and creatively apply their knowledge in novel situations
- Total of 390 minutes of assessment material

… and responded to questions on…

- their personal background, their schools, their well-being and their motivation

Parents, principals, teachers and system leaders provided data on:

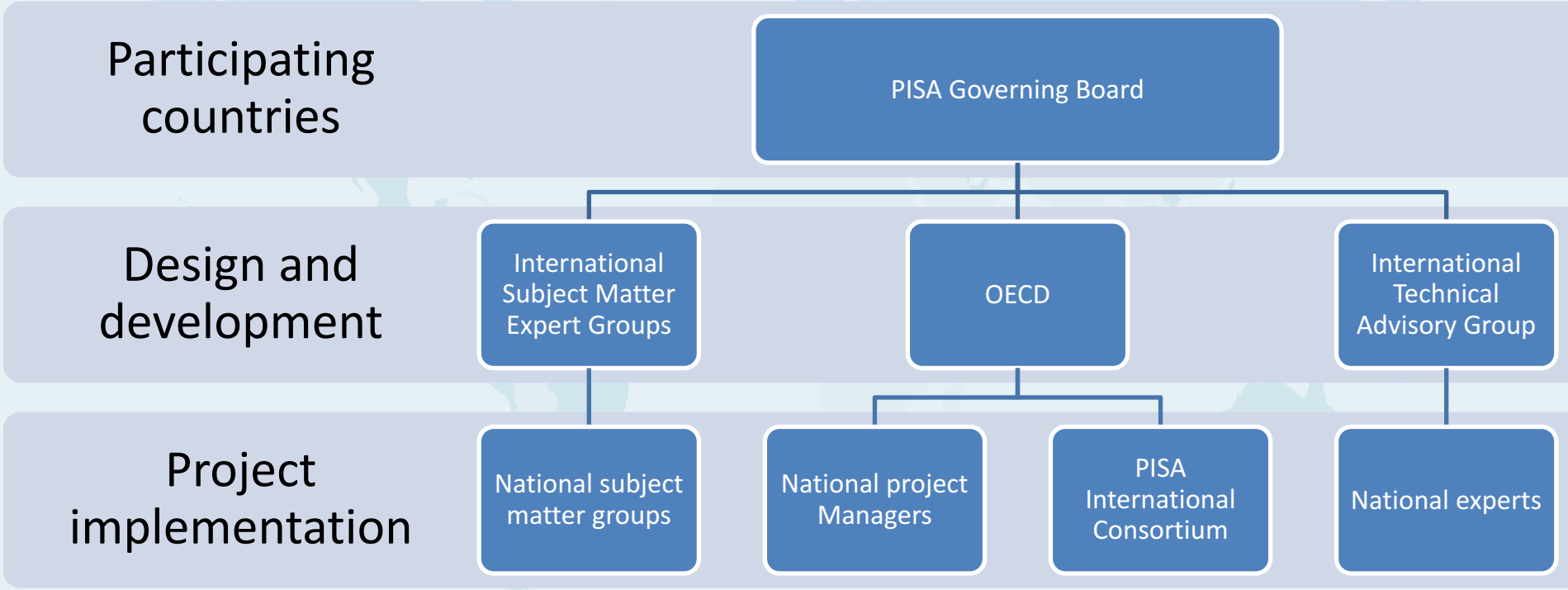
- school policies, practices, resources and institutional factors that help explain performance differences
- 89,000 parents, 93,000 teachers and 17,500 principals responded

PISA in brief – key principles

- **'Crowd sourcing' and collaboration**
  - PISA draws together leading expertise and institutions from participating countries to develop instruments and methodologies…

  … guided by governments on the basis of shared policy interests
- **Cross-national relevance and transferability of policy experiences**
  - Emphasis on validity across cultures, languages and systems
  - Frameworks built on well-structured conceptual understanding of academic disciplines and contextual factors
- **Triangulation across different stakeholder perspectives**
  - Comprehensive insights from students, parents, school principals and system-leaders
- **Advanced methods with different grain sizes**
  - A range of methods to adequately measure what young people know and can do: different grain sizes to serve different decision-making needs
  - Productive feedback to fuel improvement at every level of the system

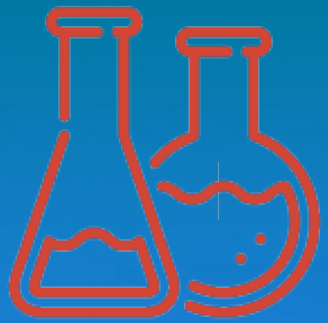
PISA in brief - Governance



Science in PISA

"the ability to engage with science-related issues, and with the ideas of science, as a reflective citizen"

A scientifically literate person is willing to engage in reasoned discourse about science and technology



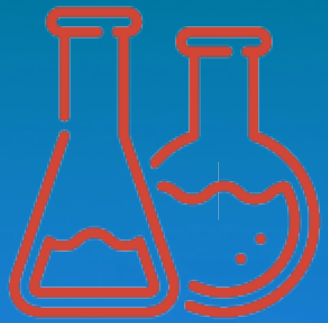
Competencies

- Explain phenomena scientifically
- Evaluate and design scientific enquiry
- Interpret data and evidence scientifically

Recognise, offer and evaluate explanations for a range of natural and technological phenomena

Describe and appraise scientific investigations and propose ways of addressing questions scientifically.

Analyse and evaluate data, claims and arguments in a variety of representations and draw appropriate scientific conclusions.



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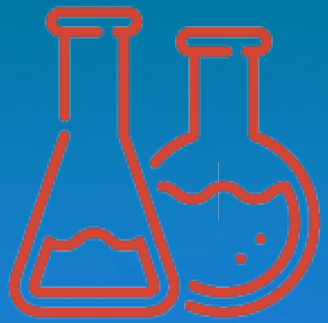
Knowledge

- Content knowledge
- Knowledge of methodological procedures used in science
- Knowledge of the epistemic reasons and ideas used by scientists to justify their claims

Each of the scientific competencies requires content knowledge (knowledge of theories, explanatory ideas, information and facts), but also an understanding of how such knowledge has been derived (procedural knowledge) and of the nature of that knowledge (epistemic knowledge)

"Epistemic knowledge" reflects students' capacity to think like a scientist and distinguish between observations, facts, hypotheses, models and theories



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Attitudes

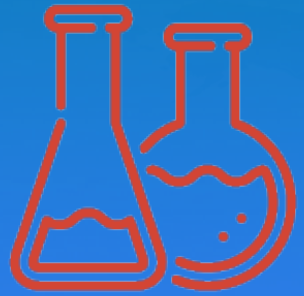
- Attitudes to science
- Scientific attitudes

Peoples' attitudes and beliefs play a significant role in their interest, attention and response to science and technology.

PISA distinguishes between attitudes towards science (e.g. interest in different content areas of science) and scientific attitudes (e.g. whether students value scientific approaches to enquiry)

Context

- Personal, local, global
- Current and historical



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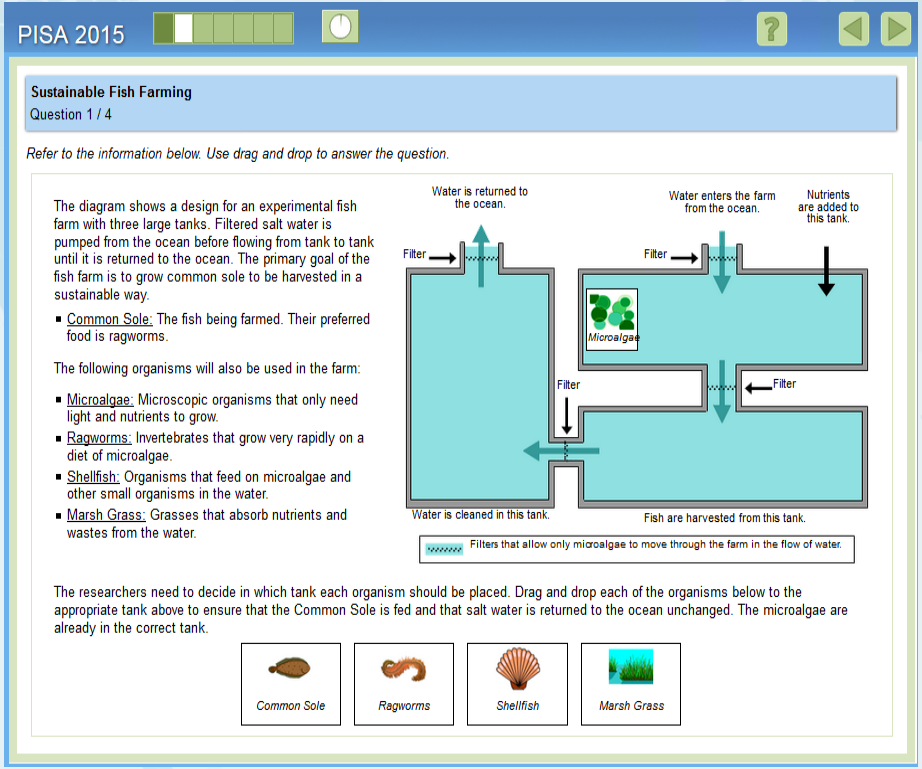
Personal, local/national and global issues, both current and historical, which demand some understanding of science and technology

The PISA tests

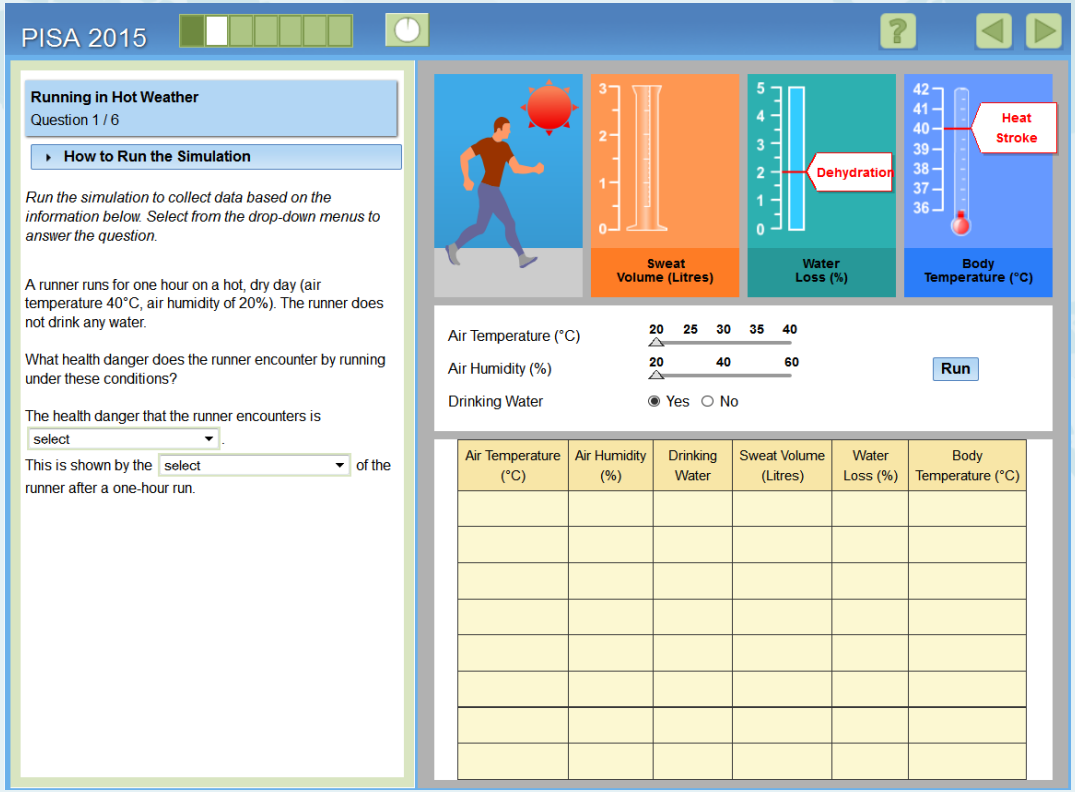
- Science: 184 items (equivalent to 6 hours)
- Reading: 103 items (equivalent to 3 hours)
- Mathematics: 81 items (equivalent to 3 hours)
- Collaborative Problem Solving: 117 items (equivalent to 1.5 hours)
- Financial Literacy: 43 items (equivalent to 1 hour)
- Each student was given a two-hour combination of these tests

PISA 2015: Take The Test



Drag Ragworms and Common Sole into Tank 2 and Marsh Grass and Shellfish into Tank 3

PISA 2015: Take The Test



Answer: Dehydration and water loss

PISA 2015: Take The Test

PISA 2015

Bird Migration
Question 1 / 5

Refer to "Bird Migration" on the right. Click on a choice to answer the question.

Most migratory birds gather in one area and then migrate in large groups rather than individually. This behaviour is a result of evolution. Which of the following is the best scientific explanation for the evolution of this behaviour in most migratory birds?

- Birds that migrated individually or in small groups were less likely to survive and have offspring.
- Birds that migrated individually or in small groups were more likely to find adequate food.
- Flying in large groups allowed other bird species to join the migration.
- Flying in large groups allowed each bird to have a better chance of finding a nesting site.

BIRD MIGRATION

Bird migration is a seasonal large-scale movement of birds to and from their breeding grounds. Every year volunteers count migrating birds at specific locations. Scientists capture some of the birds and tag their legs with a combination of coloured rings and flags. The scientists use sightings of tagged birds together with volunteers' counts to determine the migratory routes of birds.

Answer: the first option


FACT? OR FICTION?

PISA Myths

PISA Myths

"The top performers do well because they don't include all of their students"

OECD coverage of 15-year-olds: 89%, U.S. 84%

PISA Myths

“It’s all about culture”

Between 2000 and 2012, several education systems improved student performance by more than a school year

PISA Myths

"The world is divided between rich and well-educated nations and poor and badly educated ones"

Less than a quarter of the performance variation among OECD countries is explained by GDP/capita

PISA Myths

"Deprivation is destiny"

In 2012, the 10% most disadvantaged students in Shanghai reached similar math scores than the 10% most privileged American 15-year-olds

PISA Myths

"Excellence is not compatible with equity"

In 2012, there were education systems in Asia, Europe and North America with high and equitable learning outcomes

PISA Myths

“Excellence requires selection”

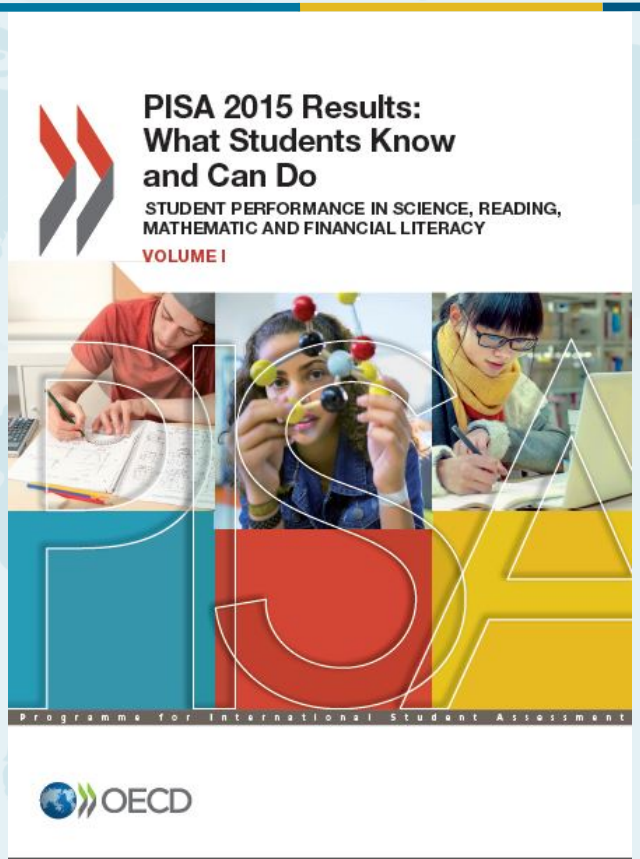
The highest-performing education systems are non-selective

PISA Myths

"Educational quality and personalization is all about class size"

The highest-performing education systems prioritize the quality of teachers over the size of classes

ALTERNATIVE: Lessons from PISA



ALTERNATIVE: Lessons from PISA

- Develop a commitment to education and a conviction that all students can achieve at high levels
- Establish ambitious, focused and coherent standards that are aligned with instructional systems
- Develop capacity at the point of delivery and provide a work organisation in which teachers collaborate and develop their potential
- Invest in equity and align resources with challenges
- Complementing accountability to agents outside schools with accountability towards professional colleagues and parents
- Balancing local responsibility with a capable centre with authority to act
- Ensuring coherence of policies and practices and securing consistency of implementation
- Ensuring an outward orientation of the system to keep the system evolving, and to recognise challenges and potential future threats to current success

Looking ahead: PISA 2018

- **PISA for Development**
- **PISA for Schools**
- **Innovative Domain: Global Competence**
  - Global competence is the capacity to analyse global and intercultural issues critically and from multiple perspectives, to engage in open, appropriate and effective interactions with others from different backgrounds on the basis of a shared respect for human dignity and to take action for the sustainability and well-being of societies